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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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Dear Mr. Chairman:

In response to your request of May 25, 1972 (enc. II), we are submitting a report (enc. I) on our review of (1) the adequacy of the motor vehicle certification procedures of the Environmental Protection Agency (EPA), (2) the capacity of EPA to oversee the auto companies' preparation of certification data, and (3) the procedures of the auto companies for developing the certification data.

Following is a summary of the information we obtained relating to the points of interest specified in your letter. These matters are discussed in more detail in the enclosed report.

On May 16, 1972, the Ford Motor Company withdrew the four applications it had made to EPA for certification of its 1973 vehicles. Ford officials withdrew their applications because they had discovered that Ford test personnel had performed unauthorized maintenance on prototype vehicles being tested for certification. The unauthorized maintenance had not been reported to EPA as performed, or included in the final applications.

Ford officials have attributed the cause of the problem to a lack of proper management control over certification testing. Within Ford, the Engine and Foundry Division had the responsibility for building the certification vehicles, conducting the tests, and compiling the certification data.

On May 23, 1972, Ford reorganized and transferred responsibility for prototype certification testing from its Engine and Foundry Division to the Environmental and Safety Engineering Staff. Ford officials told us that Ford would take a number of additional steps to improve management control over certification vehicles.

Our discussions with officials of the General Motors Corporation, the Chrysler Corporation, and the American Motors Corporation disclosed that these companies do not have formal written certification test procedures. But officials from each of the companies stated that it was unlikely that unauthorized maintenance would be performed on their test fleet vehicles without the knowledge of upper management personnel. The officials told us that EPA personnel did not visit their plants to monitor their testing or to inspect their records.

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EPA officials told us that they have no basis for suspecting that unauthorized maintenance has been performed on the test vehicles of the above-mentioned three companies. However, in view of the limited EPA staff assigned to certification activities and the lack of EPA in-plant monitoring of compliance with certification regulations, it is our opinion that EPA does not have reasonable assurance that the companies have complied with Federal regulations related to maintenance.

Our review showed that the number of EPA personnel assigned to certification activities had been insufficient to adequately perform all activities necessary to ensure that auto companies complied with Federal certification regulations. Between June 1, 1971, and June 1, 1972, personnel assigned to the Mobile Source Pollution Control Program (of which certification is a function) increased from 112 to 146. During the same period personnel assigned to certification activities increased from nine to 19. Of the 19, only 10 were directly responsible for the certification of light-duty vehicles--primarily autos. No personnel had been assigned to specifically monitor activities at the test facilities of the auto companies.

The certification staff spends a significant portion of its time explaining and interpreting Federal regulations for the auto companies. The staff normally spends the rest of its time reviewing and approving manufacturers' applications for certification; assisting auto company personnel in resolving day-to-day problems; monitoring vehicle tests at EPA's Ann Arbor, Michigan, laboratory; and reviewing test data submitted by the auto companies. The staff has not been available for monitoring the in-plant testing activities of the auto companies.

Not only is the certification staff small but the recently hired staff members are relatively inexperienced. In addition, EPA has difficulty in hiring and retaining qualified staff members, primarily because of low entrance salaries for recent college graduates and noncompetitive salaries for engineers with automotive emissions experience.

The effectiveness of EPA's certification program relies heavily on the integrity of the manufacturers to carry out the testing of prototypes in accordance with Federal regulations and to submit accurate and complete data on the tests and maintenance performed on each certification test vehicle. EPA generally has accepted at face value the information submitted by the auto companies. When prototype vehicles are delivered to EPA for testing, the EPA staff makes visual observations of the vehicles; however, EPA officials told us that there is no practical way to inspect the vehicles to determine whether unauthorized maintenance had been performed. The failure of EPA to monitor the testing activities of the manufacturers can be attributed primarily to the shortage of qualified personnel.

Because Ford is in the process of rerunning tests on its certification prototypes, EPA has instituted a number of procedural changes to coordinate, control, and accelerate the certification of Ford vehicles. EPA is documenting all communications with Ford, is inspecting test vehicles before testing begins, has notified Ford that it will make spot-check inspections of Ford's records and test facilities at any time that work is being performed on the prototypes, and has made arrangements to be responsive around the clock to special problems that Ford may encounter in testing its prototypes. The cost of these changes to the Government will be substantial. For example, the EPA staff has estimated that about 1,300 hours of overtime will be needed for certification activities related to Ford vehicles.

EPA officials told us that EPA is presently considering several alternative procedures for ensuring the integrity of certification testing by the auto companies. They said that EPA might (1) make unannounced spot inspections of the auto companies' records and test facilities, (2) station inspectors at the auto companies' test facilities to provide continuous monitoring, or (3) assume responsibility for some or all testing and mileage accumulation of the companies' prototypes.

The auto companies are primarily responsible for conducting tests and accumulating mileage on certification prototypes. EPA is responsible for ensuring that the vehicles it certifies do in fact meet Federal emission standards. To carry out this responsibility, EPA needs to assure itself to a greater extent than at present that the tests are conducted in accordance with Federal regulations. We believe, therefore, that, as a minimum, EPA needs to increase its certification staff to provide in-plant monitoring of the auto companies' test activities and records related to certification vehicles.

Our review was conducted at EPA headquarters in Washington, D.C., and at the EPA Motor Vehicle Emissions Laboratory in Ann Arbor. We reviewed pertinent records, documents, and files and interviewed various officials of EPA, Ford Motor Company, Chrysler Corporation, General Motors Corporation, and American Motors Corporation. We also visited the testing facilities of some of the auto companies.

The information contained in the enclosure to this letter has been discussed with officials of EPA, but formal written comments have not been obtained. We plan to make no further distribution of this report unless copies are specifically requested and then only after your agreement has

been obtained or public announcement has been made by you concerning the contents of the report.

Sincerely yours,

Deputy

Comptroller General
of the United States

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The Honorable Edmund S. Muskie, Chairman
Subcommittee on Air and Water Pollution 3109
Committee on Public Works S.
United States Senate

ENCLOSURE I

GENERAL ACCOUNTING OFFICE EXAMINATION INTO THE ADEQUACY OF THE ENVIRONMENTAL PROTECTION AGENCY'S MOTOR VEHICLE CERTIFICATION ACTIVITIES

CERTIFICATION PROCESS

The Clean Air Act (42 U.S.C. 1857) provides that new motor vehicles cannot be sold, offered for sale, or introduced into commerce by a manufacturer unless the manufacturer receives from the Environmental Protection Agency (EPA) a written certificate that the vehicles conform to air pollution emission standards prescribed by regulation--a certificate of conformity. The certificate of conformity is issued to the automobile manufacturer on the basis of emissions tests of selected vehicles deemed by EPA to be representative of the manufacturer's various combinations of engines and components. Specifically, section 206 of the Clean Air Act states that:

> "The Administrator shall test, or require to be tested in such manner as he deems appropriate, any new motor vehicle or new motor vehicle engine submitted by a manufacturer to determine whether such vehicle or engine conforms with the regulations prescribed under section 202 of this Act. If such vehicle or engine conforms to such regulations, the Administrator shall issue a certificate of conformity upon such terms, and for such period (not in excess of one year), as he may prescribe."

The certification process begins with the submission by the automobile manufacturer of a part I application for certification of proposed vehicles. The purposes of a part I application are to give notice to EPA of the manufacturer's intent to sell vehicles; to provide information sufficient to determine whether the test equipment, test fuel, and mileage accumulation procedure proposed to be used by the manufacturer conform to Federal regulations; and to provide the necessary description of the proposed product line, together with projected sales data, to allow EPA to select the vehicles it will require to be tested.

EPA reviews the part I application to ensure its conformity with Federal regulations and to resolve any problems with the manufacturers. At the time EPA reviews the part I application, it selects the vehicles to be tested. In selecting test vehicles EPA designates two different test fleets: an emission data fleet and a durability data fleet.

The emission data fleet consists of a number of vehicles tested to 4,000 miles to establish the emission level of a vehicle after it has been broken in. The durability data fleet consists of a smaller number of vehicles tested to 50,000 miles to establish the rate of deterioration of a vehicle's emission control system over the useful life of the vehicle.

The vehicle selection process begins by dividing the manufacturer's product line into groupings of vehicles called engine families. Each engine family consists of a group of vehicles whose engines could be expected to have similar emissions characteristics. Once the product line is divided into engine families, emission data and durability data vehicles are chosen.

After the manufacturer receives written notification that its proposed test procedures and equipment are acceptable and has been notified of the required test fleet, it can begin the second phase of the certification process--mileage accumulation and conformance testing. The manufacturer must test both emission data and durability data vehicles, at the zero-mile stage (less than 50 miles) and must report the results to EPA. After emission data vehicles accumulate 4,000 miles, they are tested by the manufacturer and the results are reported to EPA. The manufacturer then submits the vehicles to EPA for testing at its laboratory in Ann Arbor, Michigan. The EPA test results are considered official.

Durability data vehicles must be tested by the manufacturer at each 4,000-mile interval from 4,000 miles to 48,000 miles and at 50,000 miles. EPA may perform the test in its Ann Arbor laboratory at each test point. EPA tests, however, are generally run on the durability data vehicles only at intervals of 12,000, 24,000, 36,000, and 50,000 mile points.

When EPA conducts the test on a vehicle at a test point, EPA's test is used in determining conformity. When EPA does not conduct the test, the manufacturer's data is used, unless there is a lack of correlation between EPA's and the manufacturer's test equipment, in which case the manufacturer's data will not be accepted until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer.

Maintenance on the test fleets is allowed to be performed by the manufacturer in accordance with a prescribed schedule contained in the Federal regulations. Any other maintenance or repairs are allowed only with the advance approval of EPA. Requests to perform such unscheduled maintenance are frequently approved by EPA.

After completion of all the required tests on each of the emission data and durability data vehicles in an engine family, the manufacturer submits a part II application for certification of that engine family. The part II application contains a compilation of all test data (as a control measure, test data is also submitted to EPA as the tests are completed) on all vehicles tested and a full description of all maintenance performed. Compliance is determined by applying to the results of emission tests a deterioration factor determined from the durability tests and comparing the results with the applicable emission standards.

FORD MOTOR COMPANY VIOLATED
FEDERAL CERTIFICATION REGULATIONS

In April and May 1972, the Ford Motor Company submitted to EPA four part II applications for certification of 1973 engine families. On May 16, 1972, Ford withdrew the applications because top management had become aware that unauthorized maintenance had been performed on the prototype vehicles tested for certification and that such maintenance had not been reported to EPA. The unauthorized maintenance invalidated the test results on the four engine families covered by the applications. Unauthorized maintenance was also performed on the eight other 1973 engine families for which Ford had almost completed certification testing, and therefore the results of the tests on those engines were also invalidated.

This was the latest in a series of incidents involving the certification of Ford vehicles. In 1970 Ford experienced delays in testing prototypes of its 1971 heavy-duty gasoline engines and requested EPA to certify the engines on the condition that Ford would ensure the proper modification of any engines later determined by EPA to be ineligible for certification. On January 11, 1971, EPA granted Ford the conditional certification, but on January 22, 1971, EPA revoked certification for two of the 11 engine models because emission test results for those two engines exceeded Federal standards. About 500 engines had been produced for the two models whose conditional certificates were revoked. Ford modified the engines to the satisfaction of EPA and reapplied for certification of the models. Subsequently, all 11 models received certificates of conformity.

In another incident Ford shipped about 200,000 1972-model vehicles to its dealers before the vehicles were certified by EPA. EPA considered the shipments illegal and requested the Department of Justice to pursue legal action against Ford. Ford signed a consent judgment and settled for $10,000 (or about 5 cents per vehicle).

Ford attributed the cause of the current incident to a lack of proper management control over certification testing. Within Ford, the Engine and Foundry Division (E&F) had the responsibility for building the certification vehicles, conducting the tests, and compiling the certification data.

Ford officials told us that E&F thus had a vested interest in ensuring that the vehicles met Federal emission standards. They told us also that Ford did not have written procedures for testing vehicles for certification but that the Federal regulations and EPA advisory bulletins had been widely distributed to those having responsibility for certification testing.

Under the supervision of E&F, Ford's Car Product Development Group conducted the actual testing in its laboratory in Dearborn, Michigan, and drove the cars for mileage accumulation at three Ford test tracks. E&F, through Ford's Automotive Emissions Office (a staff office organizationally independent of E&F but responsible for signing Ford's applications for certification), requested approval from EPA to perform some unscheduled maintenance on certification vehicles. The Automotive Emissions Office relayed E&F's requests to EPA and maintained documentation concerning EPA's approval of such maintenance. Ford officials told us, however, that the working level staff of E&F routinely performed unauthorized inspections, tests, and maintenance on the 1973 prototype vehicles without notifying the Automotive Emissions Office or EPA. All such maintenance, tests, and inspections were noted in the vehicle logs and were entered into Ford's computer system.

As a result of E&F's complaints of inadequate support from Ford's Central Computer Group, the group prepared a complete report on all work done for E&F, including a printout of all maintenance performed on durability data vehicles. The printout contained data on two types of vehicle maintenance--that reported to EPA and that not reported to EPA. The Central Computer Group advised the Ford vice president in charge of the Automotive Emissions Office of the printout on May 11, 1972. On May 16, 1972, Ford advised EPA of the unauthorized maintenance and withdrew its four applications for certification previously submitted on 1973-model engine families.

Subsequent investigation by Ford disclosed that Ford personnel, in addition to performing unauthorized maintenance, had made unauthorized inspections and had conducted unauthorized diagnostic emissions tests. Ford identified 442 instances of unauthorized maintenance performed on 26 test vehicles.

Ford revised the application for one of its engine families to include the unauthorized and previously unreported maintenance items and resubmitted the application to EPA on May 19, 1972. The application contained 97 unreported maintenance items. EPA indicated that it would not have approved 71 of these items. EPA rejected the application.

On May 23, 1972, Ford reorganized and transferred responsibility for prototype certification testing from E&F to the Environmental and Safety Engineering Staff, which included the Automotive Emissions Office. The

vice president in charge of the Environmental and Safety Engineering Staff reports directly to the president of Ford. In a memorandum to Ford officials concerning the transfer of responsibility for certification testing, the chairman of the board stated:

> "*** once a vehicle is transferred to the Environmental and Safety Engineering Staff for certification mileage accumulation and testing, neither the Engine and Foundry Division nor any other organization will touch the car or have access to it except as directed by the Environmental and Safety Engineering Staff."

Ford also established an emissions certification organization under the Automotive Emissions Office. The emissions certification director is responsible for (1) controlling the entire certification process, (2) ensuring compliance with certification procedures, and (3) verifying the accuracy and completeness of certification applications. E&F continues to build the certification vehicles, and the Car Product Development Group continues to perform the actual testing and to drive the cars for accumulation of mileage. Ford officials told us that, in addition to the reorganization, the following actions would be taken to improve management control over certification vehicles: (1) all unscheduled maintenance which could affect emissions would require the advance approval of the Automotive Emissions Office, (2) the hoods of the vehicles would be locked to prevent tampering, (3) the vehicles would be stored in closely guarded storage areas during "soak" or cooling-down periods, (4) Ford would prepare a detailed manual fully describing the certification procedures, including the duties of drivers, mechanics, and engineers, and (5) when the manual was completed, Ford would institute internal reviews to ensure compliance with the manual provisions.

CERTIFICATION PROCEDURES OF OTHER MAJOR DOMESTIC AUTO COMPANIES

We visited the General Motors Corporation, the Chrysler Corporation, and the American Motors Corporation to obtain information on their certification test procedures. None of the companies had written procedures, but officials of each of the companies stated that it was unlikely that unauthorized maintenance would be performed on their test fleet vehicles without the knowledge of upper management personnel.

The officials told us that EPA personnel did not monitor their companies' testing activities or their test records but that EPA personnel visited the companies' facilities, when requested, to approve unscheduled maintenance or to resolve problems. The officials stated, however, that

they would have no objection to EPA's assigning inspectors to monitor testing activities.

EPA officials told us that they had no basis for suspecting that unauthorized maintenance had been performed on the test vehicles of the three companies. In view of the limited EPA staff assigned to certification activities and the inadequacy of EPA certification procedures, as discussed below, it is our opinion that EPA does not have reasonable assurance that the companies have complied with Federal regulations related to maintenance.

Specific information concerning the manufacturers' certification procedures follows.

General Motors Corporation

At the General Motors Corporation (GM), the Environmental Activities Staff is responsible for submitting certification and application data. The actual day-to-day test operations are performed under the direction of the Vehicle Emission Laboratory (VEL) at GM's proving ground garage. Engine design is the responsibility of auto divisions, such as Chevrolet and Buick, but testing is the responsibility of the proving grounds garage, which is organizationally independent of the auto divisions.

The proving grounds garage is responsible for accumulating mileage on the test vehicles and VEL is responsible for conducting the tests. Garage personnel, such as driver foremen, drivers, and mechanics, are not given test results. There is no incentive, in the opinion of GM officials, for such personnel to perform unauthorized maintenance or to violate other Government test requirements. As a further check on drivers, test vehicles are equipped with tachographs which record speed and time on tapes. VEL analyzes the tapes for violations of driving instructions and for unexplained stops. Also mechanics must have VEL's authorization before performing maintenance. The mechanics are required to maintain logs of all maintenance performed, and the logs are forwarded to EPA weekly through the Environmental Activities Staff.

The auto divisions are responsible for developing the prototypes to be tested. Occasionally, the proving grounds garage will require maintenance assistance from car division personnel, but in such instances the chief engineer of the proving grounds garage is present to ensure that emission control devices are not tampered with.

GM does not have a set of operating manuals and procedural instructions relating solely to auto emission testing. Generally the testing of prototypes, as described in GM's part I application, is conducted under GM's

normal corporate procedures, and the various organizational elements involved in emission testing are bound by these procedures. Furthermore GM supplements these procedures, when necessary, with special instructions.

GM officials told us that EPA personnel did not monitor GM's in-plant testing and records and that most EPA staff visits were for resolving problems. The officials stated, however, that they would have no objection to onsite Government inspectors' monitoring their testing activities. They stated that, if EPA wanted to keep each test car under surveillance, it would require three men per car, because of their three-shift operation, or 78 men for the test fleet of 26 cars that were being tested at that time.

Chrysler Corporation

Chrysler Corporation engineering operations are centralized under the Division of Engineering and Research. Within the division, vehicle emission certification responsibility is assigned to Materials Engineering and is carried out by its Exhaust Emissions Section. Although Chrysler engineering is centralized, engine design and emission certification activities are separate operations. Chrysler officials expressed the belief that, because of this separation of duties, Chrysler personnel would not intentionally violate Federal certification regulations.

The responsibility of the Exhaust Emissions Section begins with assembling input data for the part I application. These data are obtained from various corporate divisions. Once the data are assembled into the prescribed EPA format by the section, they are returned to the originating division for verification, prior to being submitted to EPA for approval.

The Exhaust Emissions Section is responsible for scheduling and testing operations. To carry out this phase of the certification activity, the section has a staff of about 16 engineers assigned to the Chrysler proving grounds. Test results are verified by the engineers and forwarded, with supporting documentation, to the section's central office staff for review and reverification. Test results are assembled by the central office staff for inclusion in Chrysler's part II application.

Chrysler has not developed written procedures for its vehicle certification activities. Chrysler officials told us, however, that several unwritten procedures had been established to maximize control over vehicles during the mileage accumulation and test periods. The most significant of these are listed below.

--Drivers and maintenance personnel are assigned from a central pool at the proving grounds.

They are not a part of the Exhaust Emissions Section. This is intended to relieve drivers and maintenance personnel of any vested interest in the certification program.

--Test drivers receive driving instructions from the Exhaust Emissions Section. In addition, each driver must maintain a driving log during the mileage accumulation period.

--Each test vehicle is equipped with a tachograph for recording time and speed during mileage accumulation.

--Maintenance supervisors must prepare and sign stock order forms to obtain replacement parts from the stock crib.

--Maintenance supervisors must prepare work orders for all vehicle maintenance. These must be approved by the Exhaust Emissions engineers assigned to the proving ground.

--Copies of all work orders for vehicle maintenance must be forwarded from the proving grounds to the Exhaust Emissions staff for review. These orders are entered on the section's maintenance log.

--Maintenance logs are forwarded periodically to EPA by the Exhaust Emissions Section.

As a result of the recent disclosure of unauthorized maintenance on Ford Motor Company test vehicles, Chrysler initiated an internal audit of its certification procedures. Chrysler auditors advised us that no significant problems had been identified but that two recommendations were being considered for improving vehicle control. The first related to locking or sealing the hood of the car to prevent unauthorized tampering with the engine. The second related to the possible use of prenumbered work orders to ensure that the Exhaust Emissions Section receives all vehicle maintenance work orders.

During our review we questioned Chrysler officials concerning the possibility of stationing Government personnel at the test facilities to monitor the test activities. Chrysler officials stated that they had no objection and that at least 12 persons would be required to adequately monitor Chrysler testing operations. The officials also told us that, at the request of Chrysler, EPA representatives had been at Chrysler's test facility about once a week to observe maintenance work.

American Motors Corporation

American Motors Corporation (AMC) officials stated that AMC's comparatively small corporate size allowed close supervision at all levels. The vice president for engineering and research told us that he checked the testing and certification activities daily. He said that AMC's size and financial condition required that it not absorb any losses which might be incurred if certification of new model production cars were delayed. He said that the risk involved in tampering with certification regulations would be too great.

AMC had no written procedures for development of certification data. On the basis of discussions and observations, we found that the following general procedures existed.

--Necessary mileage is accumulated by the use of dynamometers or drivers on city streets. (No test track is used.)

--Most drivers are hired through private employment agencies and do not have special technical skills.

--Drivers maintain logs of their activities during their 8-hour shifts.

--Three shifts are employed 6 days a week until the necessary mileage is accumulated.

--Test cars are monitored through the use of tachograph readings which are maintained in logs for each vehicle.

--Emission-type maintenance can only be approved by the supervisor of exhaust emissions or by his assistant.

--A detailed log on all maintenance, including such routine maintenance as oil changes, is maintained for each vehicle.

The officials said that EPA representatives had made many visits, especially during the beginning of the certification year--November and December--to explain the Federal regulations. The officials indicated that these visits were not specifically for monitoring testing.

AMC officials stated that they would not object to onsite EPA inspectors' monitoring their certification testing activities. They expressed the belief, however, that unauthorized maintenance probably could be performed, if desired, even if Government monitoring were provided.

EPA STAFF ASSIGNED TO CERTIFICATION ACTIVITIES IS INSUFFICIENT

The number of persons assigned to test and certify automobile prototypes has generally been insufficient for adequately performing all activities necessary to reasonably ensure that automobile manufacturers comply with Federal certification regulations. The Director of EPA's Mobile Source Pollution Control Program told us that his initial program plan for fiscal year 1972 provided 237 authorized positions for his program, including 46 positions for the Division of Certification and Surveillance. The Director stated, however, that EPA officials had reduced the authorization for the Mobile Source Pollution Control Program to 161 positions, of which 32 were allocated to the Division of Certification and Surveillance.

As of June 1, 1972, EPA had assigned 146 persons to the Mobile Source Pollution Control Program but only 19 were directly involved in the certification of prototypes and only 10 of those were directly involved in certifying light-duty vehicles--primarily autos. One year earlier, on June 1, 1971, only five persons were assigned to certify light-duty vehicles. In July 1970 only five positions had been authorized for the entire certification program for both light- and heavy-duty vehicles.

EPA also has assigned to its emission-testing laboratory 32 technicians of whom seven perform the certification tests of light-duty vehicles. Thus the prototypes of all auto companies are tested and certified primarily through the combined direct effort of 17 EPA personnel.

Certification staff

The 10 persons responsible for certifying light-duty vehicles are assigned among three teams, each team having responsibility for about one-third of the 52 auto companies seeking certification in model year 1973. In addition to handling smaller companies, one team handles Chrysler and AMC, one team handles GM, and one team handles Ford.

The staff spends a significant part of its time explaining and interpreting Federal regulations for the auto companies, either verbally or in writing. EPA officials told us that some provisions of the regulations were general in nature because they were intended to allow the flexibility needed in dealing with today's diverse vehicle product lines and continually developing technology. The remainder of the staff's time is normally spent reviewing and approving the auto companies' part I and part II applications for certification, assisting the auto companies in resolving day-to-day problems, monitoring vehicle tests in the EPA laboratory, and reviewing maintenance logs submitted by the auto companies as testing progresses. Staff has not been available for routine monitoring of the testing activities at the auto companies.

The Director, Division of Certification and Surveillance, told us that he had had considerable difficulty in hiring and retaining qualified people. He attributed this problem to (1) low entrance salaries--(EPA hired college graduate engineers without experience at the GS-5 level)--about $7,300 and (2) noncompetitive Federal salaries for engineers with automotive emissions experience. The certification staff recently lost two experienced engineers to the auto industry, but EPA had had difficulty attracting such people from the auto industry, even at the GS-13 level (about $18,700).

Also we noted that, although the number on the light-duty certification staff had increased from five to 10 since June 1971, five of the 10 staff members had worked for EPA less than 5 months. Three of the five are recent college graduates, and the other two have a combined total of 11-1/2 years of automotive experience. The Director told us that a newly hired college-graduate engineer needed 12 to 18 months of experience in the certification process before he could make a meaningful contribution. The Director told us that the average grade level of his staff should be increased by fiscal year 1975, if the Government is to be competitive with industry.

Laboratory staff

For 1973 models, EPA began testing durability prototypes at intermediate mileage points, in addition to the 50,000-mile point, which increased the total number of certification tests made in EPA laboratories by 50 percent over the previous year. EPA certification and laboratory officials told us that the number of laboratory technicians (seven) assigned to test light-duty vehicles was insufficient to effectively accomplish all required duties.

During the first 5 months of 1972, the seven technicians assigned to test light-duty vehicles performed about 600 tests and were required to work 500 hours of overtime. EPA officials told us that about 350 additional tests would be required to complete the certification testing of 1973 prototypes. The supervisor of the laboratory test staff expressed the belief that, because of the certification workload, his present staff of seven should be doubled.

EPA recently moved into its new $10 million emission-testing laboratory in Ann Arbor. The director of the laboratory said that it was not adequately staffed and that some equipment was being used only about one-third of the time. Another laboratory official said that, with adequate staffing, 30 tests could be run each day, compared with 10 with the present staff.

ENCLOSURE I

EPA PROCEDURES INADEQUATE FOR
REASONABLY ENSURING THAT AUTO COMPANIES
COMPLY WITH FEDERAL CERTIFICATION REGULATIONS

EPA has operated the certification program on the basic assumption that the auto companies will act in good faith, comply with EPA certification regulations, and submit complete and accurate data to EPA. On May 15, 1972, we issued to the Congress a report entitled "Cleaner Engines for Cleaner Air: Progress and Problems in Reducing Air Pollution from Automobiles, Office of Air Programs, Environmental Protection Agency" (B-166506), which included a discussion of certain shortcomings in EPA's certification program.

Our present review showed that EPA had not evaluated nor requested documentation on the practices and procedures followed by the auto companies in their testing process. Nor have EPA personnel made onsite, unannounced inspections for monitoring the auto companies' testing process and ensuring compliance with regulations. EPA visually inspects emissions data and durability data vehicles prior to testing the vehicles in its laboratory, but EPA officials told us that such inspections and tests generally could not be effective for detecting evidence of unauthorized maintenance or other irregularities.

EPA's monitoring consists primarily of its reviews of part I and part II certification applications and periodic vehicle maintenance and test records submitted by the auto companies. Certification Branch personnel evaluate data contained in the applications for conformity with the regulations. Records of the mileage accumulated, maintenance performed, and tests run on the prototypes are submitted to EPA weekly by the auto companies and are reviewed and evaluated by EPA personnel. The Director of EPA's Division of Certification and Surveillance told us that EPA's practice of accepting manufacturers' data at face value obviously was inadequate for ensuring compliance with Federal regulations.

Moreover EPA officials told us that, because of staffing limitations, EPA had not visited the manufacturers' plants to monitor the testing activities or to review the records. The visits that EPA personnel made to manufacturers' facilities usually were for resolving specific problems rather than for observing or monitoring testing practices or for spot checking records. The instances of unauthorized maintenance performed by Ford were recorded in Ford's records.

EPA's procedures have not been adequate for ensuring that manufacturers comply with Federal regulations. In addition, a lack of staff limits EPA's ability to adequately monitor the test activities of the manufacturers.

Procedures for retesting and certifying Ford cars

The process of rerunning durability tests on 39 Ford vehicles involving 12 engine families is scheduled to be completed by September 1972. To minimize delays in this testing process, EPA has established a task force to accelerate and coordinate certification of Ford vehicles. The task force is responsible for making decisions concerning the allowability of unscheduled maintenance, verifying driver's complaints, and inspecting failed components. Some of the actions EPA has taken to maintain control over the retesting of Ford vehicles include:

--Installation of a tachograph in each vehicle to provide a continuous record of vehicle usage. (GM, Chrysler, and AMC have used tachographs in their test vehicles.)

--Inspection by EPA of vehicles and components prior to the start of testing.

--Documentation of all communications between Ford and EPA, including telephone conversations and meetings.

--Tests by EPA of durability vehicles at applicable mileage points. A confirmatory test will not be run by Ford.

--Spot inspections by EPA of Ford's test facilities during any time that work is being performed for making odd-hour inspections to ensure Ford integrity for the duration of the certification test program.

--Review and evaluation by EPA of Ford's inspection procedures.

--Establishment by Ford of a system whereby EPA would be furnished with emission and maintenance data every 24 hours.

The Director of EPA's Mobile Source Pollution Control Program emphasized to us that, although EPA would give Ford priority treatment in resolving problems, reviewing data, testing vehicles, and so forth, so that Ford vehicles could be certified as soon as possible if they met Federal emission standards, EPA would not waive any regulatory or certification requirements.

Although we did not estimate the additional costs that would be incurred by EPA in its program to accelerate certification of Ford vehicles,

our review indicated that such costs would be substantial. For example, EPA estimates that about 1,300 hours of overtime work will be required. In addition, communication costs will increase as a result of the close monitoring; several EPA personnel will be assigned to monitor Ford certification activities; and a substantial amount of work will, in effect, be repeated because of the need to test an entire new fleet of prototype vehicles.

Alternative procedures being considered by EPA

EPA officials recognize that something has to be done to obtain greater assurance that auto companies comply with all Federal certification regulations, especially with respect to unscheduled maintenance. Various plans for improved monitoring of the auto companies' certification practices are being considered by EPA. An EPA official said that EPA expected to develop a plan in the near future and that it would be applied initially to the domestic auto companies. According to EPA officials the following three alternative plans were being considered.

1. The auto companies would continue to have responsibility for testing prototypes, but EPA would make unannounced inspections of the auto companies' testing facilities and records to ensure integrity of the testing.

2. EPA would have inspectors stationed at the auto companies' test facilities to continually monitor the companies' testing activities.

3. EPA would assume all responsibility for testing and mileage accumulation for some or all of the prototypes. If EPA were to assume all responsibility for testing some of the prototypes, the other prototypes would be subject to spot-check monitoring by EPA inspectors.

Alternatives 2 and 3 would probably be very expensive. For example, GM officials told us that, if the Government wanted to keep each GM test vehicle under surveillance, it would require three inspectors per car (3 shifts) or 78 inspectors for the present test fleet. A Chrysler official stated that EPA would need 12 inspectors at Chrysler: two for each of three shifts, at two locations.

With respect to alternative 3, Chrysler officials expressed the belief that EPA should not take on the responsibility for testing all prototypes, because EPA had neither the facilities nor the staff required. In addition, they said that EPA had problems with frequent staff turnover. Chrysler officials also indicated that Chrysler spent about $1 million annually on its emission certification program.

EPA's Director, Mobile Source Pollution Control Program, told us that he preferred alternative 1 and that he had requested additional resources to implement that alternative. He told us he did not believe the costs involved in alternative 2 could be justified at this time and that alternative 2 should be considered further only after experience had been gained with alternative 1. He also said that he believed that alternative 3 was unrealistic, not only because of the enormous costs involved but also because he deemed it inappropriate for the Government to assume responsibility for the testing of the vehicles. He said that under alternative 3, if a test vehicle failed for any reason, there would be endless quarreling between the EPA and the company about who caused it to fail and there would be no satisfactory way to resolve these disagreements.

CONCLUSIONS

We believe that the responsibility for accumulating mileage, testing vehicles, submitting data, and ensuring that Federal certification regulations are not violated properly should rest with the auto companies.

EPA has responsibility for ensuring that (1) the auto companies comply with Federal regulations and (2) emissions from engines awarded certificates of conformity are within established standards. We believe that, to effectively fulfill these responsibilities, as a minimum, EPA needs additional personnel assigned to its certification activities and needs to significantly increase its surveillance and monitoring of the auto companies certification procedures, practices, and records.

EPA should require that the auto companies prepare and submit to EPA written procedures for their certification activities. Officials of the four auto companies told us that they would not object to EPA inspectors' monitoring their in-plant testing and reviewing plant records related to their certification activities. In this regard, EPA personnel should be able to enter auto company facilities, unannounced, any time of the day or night when mileage is being accumulated or testing is being conducted on certification vehicles for the purpose of monitoring such activities.

Requiring the auto companies to prepare written procedures and making in-plant inspections of the companies' tests and records will not provide EPA with total assurance that the auto companies are not violating Federal regulations, but it will provide significantly greater assurance than now exists. The procedures that would provide the greatest assurance are those under which EPA assumed responsibility for accumulating all mileage and conducting all tests on all emission data and durability data vehicles of all auto companies. These procedures would also be the most expensive to implement.

Consideration should be given to the time and effort that would be required to obtain and train new staff. EPA has had problems in the past in hiring and retaining experienced staff. A sudden and extensive expansion of staff could be counterproductive because it would divert the time of the few experienced men from their certification duties to the training of newcomers.

ENCLOSURE II

United States Senate

COMMITTEE ON PUBLIC WORKS
WASHINGTON, D.C. 20510

May 25, 1972

Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Comptroller:

On May 18, the Environmental Protection Agency announced that the Ford Motor Company was withdrawing the applications it had made to EPA for certification of its 1973 vehicles. According to the EPA announcement, Ford had discovered inaccuracies in its own test data.

Subsequently, at a hearing before the Subcommittee on Air and Water Pollution on May 22, William D. Ruckelshaus, Administrator of the Environmental Protection Agency, testified that Ford test personnel had performed prohibited maintenance operations on prototype vehicles being tested for certification.

Testimony at the May 22 hearing also indicated that EPA has no secure way to check data submitted by other auto companies to make sure that similar prohibited acts have not occurred in preparation of their data. Primary reliance for discovering such prohibited acts, EPA indicated, must come from disclosures of auto company employees.

In light of these events, I ask your help in investigating the current capacity of EPA to oversee the auto companies' preparation of data for certification and the adequacy of EPA procedures to prevent similar circumstances in the future. Specifically, I would like to know:

(a) The number of EPA personnel assigned to prototype certification activities;

(b) The number of EPA personnel assigned to monitor the development of certification data by the auto industry -- including the number of personnel assigned to monitor activities at the test facilities of the respective auto makers;

(c) The adequacy of EPA procedures to assure that regulations covering the certification tests are not violated in the testing process; and

(d) The extent to which the data available to EPA enables the agency to independently evaluate the manufacturer procedures as required by section 208 of the Clean Air Act.

Further, EPA has indicated to the Subcommittee on Air and Water Pollution that legislation may be needed to assist Ford Motor Company in solving the problems it faces now in developing new data for certification and in getting cars into production in time for the 1973 auto year.

Before such legislation can be seriously considered, it is essential for the Subcommittee to know whether the Ford discovery of prohibited acts in the certification testing process represents an isolated incident or a more pervasive practice in the auto industry.

For this reason, I ask you also to investigate the certification data submitted to the Environmental Protection Agency by the auto companies for their 1973 vehicles and the practices and procedures employed by the auto industry in developing this data to assure that these practices are consistent with the law and EPA regulations.

As we expect a request for action on legislation in a reasonably short time, a report is needed within 10 days. Prompt study of this matter is vital to assure fully informed Congressional consideration of measures to deal with this problem.

Sincerely,

EDMUND S. MUSKIE, U.S.S.
Chairman, Subcommittee on
Air and Water Pollution